IN THE CLAIMS:

1. (Previously Presented) A method of forming a layer of metal on a semiconductor structure, comprising:

bringing an electrode into contact with an electrolyte;

bringing said semiconductor structure into contact with said electrolyte, said semiconductor structure comprising a plurality of openings having differing lateral widths;

forming said layer of material to thereby overfill said plurality of openings by applying, in a first time interval, a first current flowing from said electrode through said electrolyte to said semiconductor structure, said first current having a first amperage comprising a plurality of first positive pulses, each of which are applied for a first time duration, and a plurality of first negative pulses, an integral of said first amperage over said first time interval having a first value greater than zero, each of said plurality of first negative pulses being applied for a second time duration that is less than said first time duration, an absolute value of each of said plurality of first negative pulses being less than absolute value of said plurality of first positive pulses, wherein said layer of material has an initial thickness above said semiconductor structure; and

reducing said initial thickness of said layer by applying, in a second time interval, a second current flowing from said electrode through said electrolyte to said semiconductor structure, said second current having a second amperage comprising a plurality of second negative pulses, each of said plurality of second

negative pulses having an absolute value that is greater than said absolute value of said plurality of first negative pulses, an integral of said second amperage over said second time interval having a second value less than zero.

2. (Original) The method of claim 1, wherein an absolute of said first value is greater than an absolute of said second value.

3. (Canceled)

4. (Previously Presented) The method of claim 1, wherein said second amperage further comprises a plurality of second positive pulses.

5. (Original) The method of claim 4, wherein each of said second negative pulses is followed by at least one of said plurality of second positive pulses.

6. (Original) The method of claim 4, wherein said second negative pulses and said second positive pulses have a substantially rectangular shape.

7. (Original) The method of claim 1, wherein said second amperage is substantially constant and less than zero.

8. (Original) The method of claim 1, wherein said first positive pulses and said first negative pulses have a substantially rectangular shape.

9. (Original) The method of claim 1, wherein each of said first positive pulses is followed by at least one of said first negative pulses.

10. (Original) The method of claim 1, wherein said first amperage depends on time t substantially like $A_1 \cdot \sin(\omega_1 \cdot t + \varphi_1) + B_1$, wherein A_1 is a first amplitude, ω_1 is a first angular frequency, φ_1 is a first phase shift and B_1 is a first offset greater than zero.

11. (Original) The method of claim 10, wherein an absolute of A_1 is greater than an absolute of B_1.

12. (Original) The method of claim 1, wherein said second amperage depends on time t substantially like $A_2 \cdot \sin(\omega_2 \cdot t + \varphi_2) + B_2$, wherein A_2 is a second amplitude, ω_2 is a second angular frequency, φ_2 is a second phase shift and B_2 is a second offset less than zero.

13. (Original) The method of claim 12, wherein an absolute of A_2 is substantially equal to an absolute of B_2.

14. (Original) The method of claim 1, wherein bringing said electrode and said semiconductor structure into contact with said electrolyte comprises at least partially immersing said electrode and said semiconductor structure into said electrolyte.

15. (Original) The method of claim 1, further comprising depositing an electrically conductive seed layer.

16. (Original) The method of claim 15, wherein depositing said electrically conductive seed layer comprises at least one of physical vapor deposition and chemical vapor deposition.

17. (Original) The method of claim 15, wherein depositing said electrically conductive seed layer comprises electroless plating.

18. (Original) The method of claim 1, further comprising chemical mechanical polishing said semiconductor structure.

19. (Currently Amended) A method, comprising:

providing a semiconductor structure comprising a plurality of openings having different lateral widths;

performing an electroplating process on said semiconductor structure to deposit a layer of metal on said semiconductor structure and thereby overfill said plurality of openings with said metal, wherein said electroplating process is performed by applying, in a first time interval, a first current flowing from an electrode through an electrolyte to said semiconductor structure, said first current having a first amperage comprising a plurality of first positive pulses, each of which are applied for a first time duration, and a plurality of first negative pulses, each of said

<u>plurality of first negative pulses being applied for a second time duration that is less than said first time duration,</u> an integral of said first amperage over said first time interval having a first value greater than zero, wherein said layer of metal has an initial thickness above said semiconductor structure;

after performing said electroplating process, reducing said initial thickness of said layer of metal by performing an electropolishing process on said semiconductor structure for preferentially removing a portion of said layer of metal from said at least one elevation, wherein said electropolishing process is performed by applying in a second time interval a second current flowing from said electrode through said electrolyte to said semiconductor structure, said second current having a second amperage comprising a plurality of second negative pulses, each of said plurality of second negative pulses having an absolute value that is greater than an absolute value of said plurality of first negative pulses, an integral of said second amperage over said second time interval having a second value less than zero; and

after performing said electropolishing process, performing a chemical mechanical polishing process on said semiconductor structure, said chemical mechanical polishing process removing a surplus of said layer of metal from said at least one elevation and planarizing a surface of said semiconductor structure.

20. (Canceled)

21. (Previously Presented) The method of claim 19, wherein bringing said electrode and said semiconductor structure into contact with said electrolyte comprises immersing said electrode and said semiconductor structure at least partially into said electrolyte.

22. (Previously Presented) The method of claim 19, wherein an absolute of said first value is greater than an absolute of said second value.

23. (Original) The method of claim 22, wherein said first time interval is longer than said second time interval.

24. (Canceled)

25. (Canceled)

26. (Previously Presented) The method of claim 19, wherein said first positive pulses and said first negative pulses have a substantially rectangular shape.

27. (Previously Presented) The method of claim 19, wherein each of said first positive pulses is followed by at least one of said first negative pulses.

28. (Canceled)

29. (Previously Presented) The method of claim 19, wherein said second amperage further comprises a plurality of second positive pulses.

30. (Original) The method of claim 29, wherein said second negative pulses and said second positive pulses have a substantially rectangular shape.

31. (Previously Presented) The method of claim 19, wherein said first amperage depends on time t substantially like $A_1 \cdot \sin(\omega_1 \cdot t + \varphi_1) + B_1$, wherein A_1 is a first amplitude, ω_1 is a first angular frequency, φ_1 is a first phase shift and B_1 is a first offset greater than zero.

32. (Original) The method of claim 31, wherein an absolute of A_1 is substantially equal to an absolute of B_1.

33. (Previously Presented) The method of claim 19, wherein said second amperage depends on time t substantially like $A_2 \cdot \sin(\omega_2 \cdot t + \varphi_2) + B_2$, wherein A_2 is a second amplitude, ω_2 is a second angular frequency, φ_2 is a second phase shift and B_2 is a second offset less than zero.

34. (Original) The method of claim 33, wherein an absolute of A_2 is substantially equal to an absolute of B_2.

35. (Previously Presented) The method of claim 19, wherein said first amperage is substantially constant and greater than zero.

36. (Previously Presented) The method of claim 19, wherein said second amperage is substantially constant and less than zero.

37. (Canceled)

38. (Canceled)

39. (Previously Presented) The method of claim 19, wherein said at least one recess comprises at least one of a via and a trench.

40. (Previously Presented) The method of claim 19, further comprising depositing an electrically conductive seed layer.

41. (Original) The method of claim 40, wherein depositing said seed layer comprises at least one of physical vapor deposition and chemical vapor deposition.

42. (Original) The method of claim 40, wherein depositing said seed layer comprises electroless plating.

43. (Previously Presented) The method of claim 19, further comprising, after performing said electropolishing process, performing a second electroplating process of said semiconductor structure for increasing a thickness of said layer of said metal.

44. (Canceled)

45. (Previously Presented) The method of claim 43, further comprising performing a second electropolishing process on ~~of~~ said semiconductor structure.

46. (Canceled)

47. (Canceled)